Department of LABOR AND INDUSTRIES

ELECTRICAL CURRENTS

Code guidance from the Department of Labor and Industries
Office of the Chief Electrical Inspector

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Electrical code issues and answers.

● "Wireless" Security Systems.

The department has been asked to clarify what systems qualify as wireless security systems. Any system that requires field installation of conductors or termination of conductors on equipment is not "wireless." A typical Class 2 security system requires wiring to be field installed (sometimes in wall or ceiling cavities) between a listed Class 2 transformer and the control enclosure of the system. For this reason the department has not considered these systems wireless and has consistently required that a certified individual working for a licensed electrical contractor perform any field wiring involved with these systems. This type of system also requires a permit and inspection.

It has come to the attention of the department that the systems described above are being installed by non-certified individuals without permits and inspections. RCW 19.28.120 requires an electrical contractor's license to install wires and equipment to convey electrical current. RCW 19.28.620 requires that the licensed electrical contractors employ certified individuals to make installations. RCW 19.28.510 requires each individual who performs these installations to hold a certificate of competency. Firms and/or individuals that violate the law are subject to civil penalties.

Only systems that are totally plug-and-play (listed systems with a factory installed cord and plug) which require no field installation or concealment of wires could be considered wireless. Check with your local inspection office prior to installation of systems you believe are "wireless." **This clarification by the Chief Electrical Inspector supersedes any previous interpretations issued by the department.**

● Limited Energy and Low Voltage Wiring Issues.

What are the voltage and energy limitations for the Limited Energy System (06) Specialty and the HVAC/Refrigeration Limited Energy System (06A) Specialty? The intent of the Electrical Board and the department when the (06) Limited Energy System specialty was established was to restrict this specialty to installations of "low energy circuits and equipment." The **(06) Specialty** is restricted to Class 1 power-limited circuits (30 volts maximum), Class 2 circuits (30 volts maximum) and Class 3 circuits (up to 100 volts maximum). The **(06A) Specialty** is limited to installations of Class 2 (30 volts maximum) control circuit cables and replacement of like-for-like line voltage components in HVAC/R equipment only. (See June, 1999 Electrical Currents).

Can the (06A) HVAC/Refrigeration contractor and technician perform service and repair work on equipment located in buildings that exceed the three-floor limitation? Yes. The intent of WAC 296-46-930 and WAC 296-401A-140 rules are to allow the (06A) specialty to service, maintain, or repair existing HVAC/R equipment and low voltage control systems located in commercial buildings regardless of the number of floors. However, this specialty is restricted to installations of new low voltage Class 2, HVAC/R, control systems in commercial buildings three floors and under, except for residential occupancies.

Are boxes required for splices of Class 1, 2, and 3 conductors? NEC 725-3 states that only those sections of NEC 300 specifically referenced in NEC 725 shall apply to Class 1, Class 2, and Class 3 circuits. Outlet boxes must be used for Class 1 circuits and fire alarm circuits [NEC 760-25, 760-30(a), and 760-52(b)(1)]. Also, all low-voltage and limited-energy devices in fire walls, floors, and ceilings must be installed in metal boxes or fire rated nonmetallic boxes [NEC 300-21].

Can cable be strapped to conduit and does it require sleeving for protection? If the cable is used for purposes that classify it as a Class 2 or 3 system conductor, it cannot be strapped to conduit according to NEC 725-54(d), unless it meets exception NEC 300-11(b)(2). If the cable is used to interconnect computers for the purpose of exchanging data over a LAN, it must be installed in accordance with NEC 725, Class 2 or 3 circuits. Where cable is used for communications purposes under Article 800, raceways shall not be used to support communications cables NEC 800-52(e). If coax is used for purposes in NEC 820, raceways shall not be used as a means of support NEC 820-52(e). A general rule for all cables is that if the cable is exposed to physical damage, it must be protected with conduit sleeving.

Must material and equipment be listed by an accredited products testing laboratory? Yes. Listed material and equipment must be used when a published safety standard exists to test the equipment and when two or more manufacturers list the product, WAC 296-46-100. However, if the product is not listed by two or more manufacturers or is custom-built, third-party field evaluation of the equipment will be required.

Can low-voltage and limited energy wire be supported by T-Bar ceilings? WAC 296-46-30001 does not allow electrical wiring to be secured to ceiling support wires. However, independent support wires may be installed and used to secure low voltage wiring. Low-voltage and limited energy wiring must be supported by the building structure in such a manner that cables will not be damaged by normal building use. Cables cannot lie on top of ceiling tiles but must be properly supported.

● Non-compliance Citations Issued in 1999.

1999 has been a busy year for electrical non-compliance enforcement in the state. Inspectors so far this year have issued 150 citations for performing electrical work without a contractor's license, 335 citations for working without an electrician certificate, trainee card, or working without the proper ratio of journeymen to trainees. Electrical administrators have been issued 288 citations this year for failing to perform their legal duties as administrators. The department also issued 266 citations for other violations of RCW 19.28. Please review the requirements of RCW 19.28, WAC 296-46, and WAC 296-401A to avoid future violations that result in citations and monetary penalties.

● Mobile Computing for Field Inspectors.

The department has begun the preliminary work needed to provide Electrical Field Inspectors with mobile, handheld computers. Handheld computers will provide the inspector with several new tools that will eliminate paperwork, provide the inspector with a much greater detail of inspection permit history on the jobsite, and reduce entry errors made under the current methods of recording inspection activity. Fujitsu 2300 handheld computers with truck stands have been ordered. Software to download and upload inspection data into the EPS system is being developed and will be tested in January. All field inspectors will be provided with individual training on the use of the new computers during February and March. Our goal is full deployment of the new system by the end of the first quarter of year 2000.

● Internet Electrical Inspection Request System (EIRS) is a Success, Sign Up Now!

Last month we told you about the roll out of a new service, EIRS, offered to contractors who purchase electrical permits. The service provides contractors the ability to request inspections through the Internet, 24 hours a day, 7 days a week. The customers using the system LOVE IT. The general statement from contractors using the system is, "This is great!" We have received applications from some of you, but know there are more of you out there who can benefit from this service. If you want to sign up go to the electrical web site, click on the EIRS link to print the application, or pick up the phone and call (360) 902-5252 to request a hard copy of the application to be mailed to you.

● New Affidavit of Experience Forms for Trainees and Certification Applications.

The department has redesigned the affidavit of experience form for electrical trainees and electrician certification applications. Effective January 1, 2000, the department will **no longer** accept affidavits submitted on forms with a revision date prior to 2-99. The revision date can be found at the bottom left hand corner of the form.

The major change to the form is the requirement of the applicant's notarized signature **in addition** to the verifying contractor or designated individual's signature. Affidavits received without both notarized signatures will be returned without review by Central office staff.

These changes have been made to:

- Ensure the applicant is aware and agrees to the information being supplied by the verifying individual.
- Provide the department with better tools for enforcement against people who submit falsified documents.

If you have old affidavit forms and applications in your possession, please dispose of your existing stock. Current forms are available from all Electrical Field Service Locations, Central Office, or can be downloaded and printed from the Electrical Web site from the Forms and Publications section.